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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Shirley Lee et al.

Serial No.: 09/702,185

5 Filing Date: October 30, 2000

Title: INK AND UNDERPRINTING FLUID COMBINATIONS WITH IMPROVED INKJET PRINT IMAGE COLOR AND STABILITY

10 **DECLARATION UNDER 37 CFR §1.132**

I, Shirley Lee, am the primary inventor in the above-referenced application. Over several years working in the research and development of inkjet ink at HP, I and my co-researchers at HP have performed extensive research regarding the interaction of underprinting and/or overprinting fixers with inkjet ink. Results of one such study are

15 given below:

When a cationic fixer composition containing a small cationic polymer, polyethylenimine (3.5%) but no large polymer (e.g. quaternary ammonium having a MW from 1000-10,000) and another cationic fixer composition containing both the small cationic polymer (3.5%) plus a large polymer, styrene maleimide (SMA 1000i)(3%), a quaternary ammonium polymer resin with a molecular weight of 5000-10,000, were compared for their qualities of increased smudgefastness and optical density during interaction with inkjet ink, it was found that the second fixer containing styrene maleimide (SMA 1000i) showed significantly better performance in both increase of optical density and smudgefastness. Such an increase in optical density and smudgefastness characteristics indicates good film-forming and mechanical resistance qualities in the cationic fixer containing the styrene maleimide in comparison to the cationic fixer without the styrene maleimide.

20 30 The comparative data was obtained using cationic fixer composition with black inkjet ink containing RB-31 dye which harbors both carboxylate and sulfonate groups. The fixers referred to above have the following formulas:

Fixer w/o large Quaternary Ammonium		Fixer w/ large Quaternary Ammonium	
		6%	tetraethyleneglycol
5%	2-pyrrolidone	4%	pyrrolidone
10%	1,5pentanediol	10%	1,5pentanediol
0.45%	Tergitol 15-S-7	1.25%	Tergitol 15-S-5
0.20%	Bioterg PS-*S; 35%	0.70%	Bioterg PS-*S; 35%
0.05%	Tinulux BBS	0.05%	Tinulux BBS
5%	PEI (nitric neutral- ized)	3.50%	PEI (nitric neutral- ized)
2.50%	Calcium ni- trate·4H ₂ O	3.50%	Calcium ni- trate·4H ₂ O
		3%	SMA 1000i
Final pH=4		Final pH=4	

5 All statements made in this Declaration which are of my own knowledge are true and all statements made on information and belief are believed to be true. I have also been warned that willful false statements and the like are punishable by fine or imprisonment or both (18 U.S.C. 1001) and that such false statements may jeopardize the validity of the present application or any patent issuing therefrom.

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Further declarant sayeth not.

Shirley Lee

Date: 4/11/2003

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